

To: WRSP(3)

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9 December 1957

From: R-W

Info: Headquarters ✓ 25X1A

REF 22403
COPY 1 OF 1Ref: Report from [REDACTED], dated 7 November, 1957,
subject: "System 3 and other things"

Some of the early schematics of the second local oscillator board in System 3 show the biasing and return circuits of the scale-of-3 counter as follows:

R796, Open - no return
R803, Return to -130 volts
R809, Return to -130 volts

R796 /
R803 /
R809 /

It was discovered that the scale-of-3 counter would occasionally malfunction by assuming a fourth stable state in which all three transistors were conducting. An input pulse at this time would not shift the state of the scale-of-3 counter. To overcome this possibility, dissymmetry in the biasing was added as follows:

R796, Still open
R803, Return to ground
R809, Open

Our records indicate that all systems were modified accordingly.

In the System 3 second local oscillator board, the Z702 matrix assemblies are all labeled the same. When viewing the board from the component side with the printed circuit connector pointing in a downward direction, the input to the matrix system is the "units" capsule on the left. Progressing to the right, the next matrix capsule is the "2's"; the next is the "4's" and the next is the "8's."

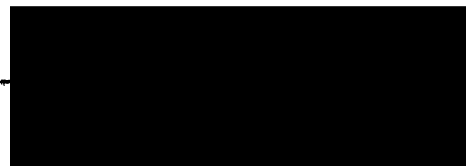
Thanks for the recommendation on the third local oscillator output jack.

You are correct regarding the assumption for the calculation of incident power level at the System 1 antennas. The experimental values of open circuit detector voltage as a function of radiated power with the test antenna five feet from the receiving antenna agree closely with theoretical calculations. There is nothing wrong with backing off ten feet from the receiving antenna, but the figures obtained in the present set-up are sufficiently accurate.

This is to verify that the System 3 first mixer cathode voltage should have a 0.2-volt swing as the first local oscillator is switched on and off. This occurs with approximately 1 volt of local oscillator r-f coupling to the mixer. With 1/2-volt r-f coupling, a 0.1-volt swing should be expected. A normal cathode voltage would be 2 volts with a swing to 2.2 volts.

25X1A

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